

REMARKS

Claims 1, 2, 5 and 7 are pending and stand ready for further action on the merits. Support for the amendment to claim 1 can be found in cancelled claims 3, 4 and 6. Claims 5 and 7 have been amended for clarity. No new matter has been added by way of the above-amendment.

The following sections correspond the sections of the outstanding Office Action.

Claim Rejections - 35 U.S.C. 112

Claims 1-7 are rejected under 35 U.S.C. 112, 2nd paragraph for being indefinite. Applicants respectfully traverse the rejection.

Applicants have amended claim 1 to recite proper Markush terminology as suggested by the Examiner and cancelled claim 3. In view of the above amendment, Applicants respectfully submit that the claims particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Accordingly, withdrawal of the rejection is respectfully requested.

Claim Rejections - 35 U.S.C. 103

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sehm, U.S. 4,419,502. Applicants respectfully traverse the rejection.

The present invention is drawn to a carboxyl group-containing polymer composition showing excellent solubility in water and giving the aqueous solution excellent thickening properties. These compositions may be used as thickeners and suspension stabilizers for emulsions and suspensions by dissolving the polymer in water and neutralizing the solution with an alkali to give a neutralized viscous solution.

The advantage of the inventive polymer composition in the above-described applications is that it will readily form a homogeneous aqueous solution of the polymer. Thus, the inventive polymer composition can be used with a high production efficiency and there is no need for a specialized dissolving device for prevention of the generation of undissolved powder lumps.

Sehm discloses at column 1, lines 27 to 32 that carboxyl containing polymers are prepared from vinylidene monomers in the presence of polyoxyethylene alkyl ester and/or polyoxyethylene

sorbitol ester surface active agents having HLB values greater than 12.

It is important to note that Sehm defines the meaning of the polyoxyethylene sorbitol ester surface active agent at column 6, lines 23 to 40. As is clear from the general formula described at column 6, line 31 and sorbitan polyoxyethylene (20) monostearate described at column 8, lines 1 to 2 (Example I), the polyoxyethylene sorbitol ester surface active agent has a sorbitan moiety which is "cyclic" prepared by cyclic dehydration of sorbitol.

On the contrary, according to the present invention, as a component (d), an alkylene oxide adduct of an ester obtained from a polyhydric alcohol and a fatty acid, and the polyhydric alcohol is selected from the group consisting of glycerol, polyglycerol and a linear sorbitol¹.

Therefore, the compound (d) in which linear sorbitol is used is quite different from the polyoxyethylene cyclic sorbitol ester surface active agent disclosed by Sehm.

Moreover, the chemical structure of the inventive compound (d) is quite different from that of the polyoxyethylene sorbitol ester surface active agent disclosed by Sehm. Since the inventive

¹ Please note that the sorbitol is a "linear" polyhydric alcohol, although sorbitan is a "cyclic" compound as explained above. Therefore, the component (d) does not have a sorbitan moiety as disclosed by Sehm.

compound (d) is an alkylene oxide adduct of an ester obtained from a polyhydric alcohol such as sorbitol and a fatty acid, the inventive compound (d) has the following chemical structure:

[fatty acid]-[alkylene oxide]-[sorbitol].

This is quite different from the polyoxyethylene sorbitol ester surface active agent disclosed at column 6, line 31 of Sehm which has the following chemical structure:

[fatty acid]- [sorbitan]-[alkylene oxide].

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of obviousness. See MPEP § 2143.03. Since Sehm fail to teach or fairly suggest the use of inventive compound (d), a *prima facie* case of obviousness cannot be said to exist. Accordingly, this rejection should be withdrawn.

Claim Rejections - 35 U.S.C. 102

Claims 1-7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nagasuna et al. (U.S. 4,973,632). Applicants respectfully traverse the rejection.

Applicants respectfully submit that Nagasuna et al. fail to teach or fairly suggest the inventive carboxyl group-containing polymer (A) prepared by copolymerizing an α,β -unsaturated carboxylic acid (a) with a compound (b) wherein said compound (b) having at least two ethylenic unsaturated groups is at least one compound selected from the group consisting of pentaerythritol tetraallyl ether, tetraallyloxyethane and polyallyl saccharose.

Nagasuna et al. teach the use certain compounds having at least two ethylenic unsaturated groups as crosslinking agents in the following passage:

N,N'-methylene-bis(meth)acrylamide, N-methylol(meth)acrylamide, ethylene glycol (meth)acrylate, polyethylene glycol (meth)acrylate, propylene glycol (meth)acrylate, polypropylene glycol (meth)acrylate, glycerol tri(meth)acrylate, glycerol mono(meth)acrylate, polyfunctional metal salts of (meth) acrylic acid, trimethylolpropane tri(meth)acrylate, triallylamine, triallyl cyanulate, triallyl isocyanulate, triallyl phosphate, glycidyl (meth)acrylate. As examples of agents having reactive functional groups for example, in a case that a

monomer has a carboxyl and/or carboxylate group, polyhydric alcohol derivatives such as ethylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, polyethylene glycol, glycerol, polyglycerol, propylene glycol, diethanolamine, triethanolamine, polyoxypropylene, oxyethyleneoxypropylene block co-polymer, pentaerythritol, and sorbitol; polyglycidyl derivatives such as ethylene glycol diglycidyl ether, polyethylene glycol diglycidyl ether, glycerol polyglycidyl ether, diglycerol polyglycidyl ether, polyglycerol polyglycidyl ether, sorbitol polyglycidyl ether, pentaerythritol polyglycidyl ether, propylene glycol diglycidyl ether, and polypropylene glycol diglycidyl ether; aziridine derivatives and related compounds such as 2,2-bishydroxymethylbutanol-tris [3-(1-aziridinyl) propionate], 1,6-hexamethylene-diethylene urea, and diphenylmethane-bis-4,4'-N,N'-diethylene urea; haloepoxyl compounds such as epichlorohydrin and .alpha.-methylchlorohydrin; polyaldehydes such as glutar aldehyde and glyoxal; poly amine derivatives such as ethylene diamine, diethylene triamine, triethylene tetramine, tetraethylene pentamine, pentaethylene hexamine, and polyethylene hexamine; polyisocyanates such as 2,4-toluylenediisocyanate and hexamethylenediisocyanate... (See Column 4, line 54 to Column 5, line 20).

In describing the requirements for rejection of a claim by anticipation, the Manual of Patent Examining Procedure (Section 2131) states:

[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (ref. omitted). The identical invention must be shown in as complete detail as is contained in the... claim (ref. omitted).

Accordingly, Applicants respectfully indicate, every element in a claim must be found in the reference in order that the reference anticipates the claim. In the passage of Nagasuna et al. cited above, Nagasuna et al. teach certain compounds having at least two ethylenic unsaturated groups as crosslinking agents. However, Nagasuna et al. fail to teach or fairly suggest the inventive compound (b) which is at least one compound selected from the group consisting of pentaerythritol tetraallyl ether, tetraallyloxyethane and polyallyl saccharose. Therefore, the reference does not anticipate the claims, and as such, Applicants respectfully request that the rejection be withdrawn.

Information Disclosure Statement (IDS)

On September 25, 2003, Applicants timely filed an IDS. The Examiner is respectfully requested to forward a signed copy of the PTO-1449 form indicating that all of the references cited in the IDS have been considered.

Conclusion


In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A notice to such effect is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq., (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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